

Thermally Conductive Tape Based on Carbon Nanotube Array, Phase I

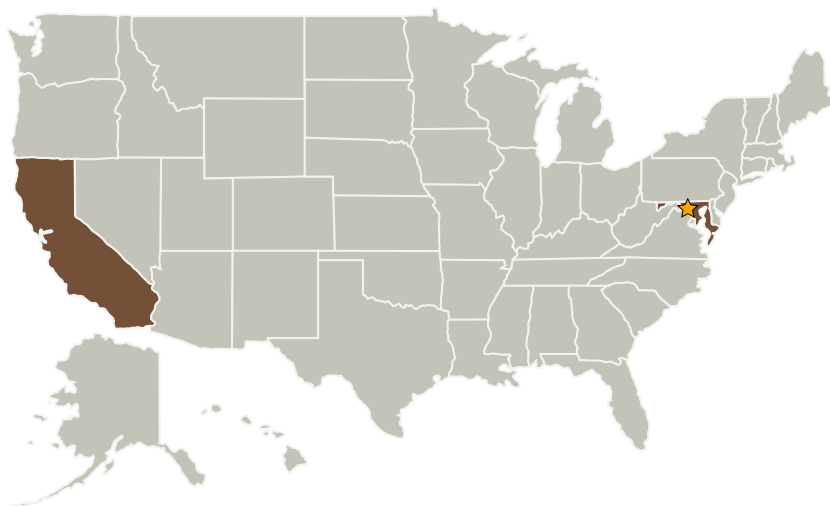
Completed Technology Project (2008 - 2008)



Project Introduction

Future NASA missions require thermal control systems that can accommodate large changes in ambient temperature. The two essential aspects of an effective thermal interface material (TIM) are high compliance and high thermal conductivity. Thermal interface materials (TIM) are often used to fill the cavities between mating surfaces to increase the thermal conductance across the interface. Traditional TIMs are polymer based composites such as thermal grease or paste. The nature of polymer matrices makes them inapplicable under vacuum and in a cryogenic environment. The goal of the proposed research is to develop a flexible thermally-conductive tape. The proposed innovation forms a versatile, vacuum-proof, thermally conductive tape. The tape is pliable and should conform to the contours of the interface. Carbon nanotubes bridge the two mating surfaces, thereby effectively conducting heat across the interface.

Primary U.S. Work Locations and Key Partners



| Organizations Performing Work | Role | Type | Location |
|------------------------------------|-------------------------|-------------|----------------------|
| ★Goddard Space Flight Center(GSFC) | Lead Organization | NASA Center | Greenbelt, Maryland |
| Atlas Scientific | Supporting Organization | Industry | San Jose, California |



Thermally Conductive Tape Based on Carbon Nanotube Array, Phase I

Table of Contents

| | |
|--|---|
| Project Introduction | 1 |
| Primary U.S. Work Locations and Key Partners | 1 |
| Organizational Responsibility | 1 |
| Project Management | 2 |
| Technology Areas | 2 |

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Thermally Conductive Tape Based on Carbon Nanotube Array, Phase I

Completed Technology Project (2008 - 2008)



Primary U.S. Work Locations

California

Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

James Maddocks

Technology Areas

Primary:

- TX14 Thermal Management Systems
 - └ TX14.3 Thermal Protection Components and Systems
 - └ TX14.3.1 Thermal Protection Materials